Geo-Spark 1000 Plus
Solid State Pulsed Power Supplies

Applications

- **Very high resolution seismic acquisition e.g. site & route surveys**

Is typically combined with:

- **Geo-Source 200-400-tip sparkers (marine and fresh water)**
- **Geo-Boomer 300-500 Joules**
- **Borehole Sparkers**
- **Pulsed power projects & research**

100 % Safety Features

All possible features have been integrated into the systems to safeguard against potential human error.

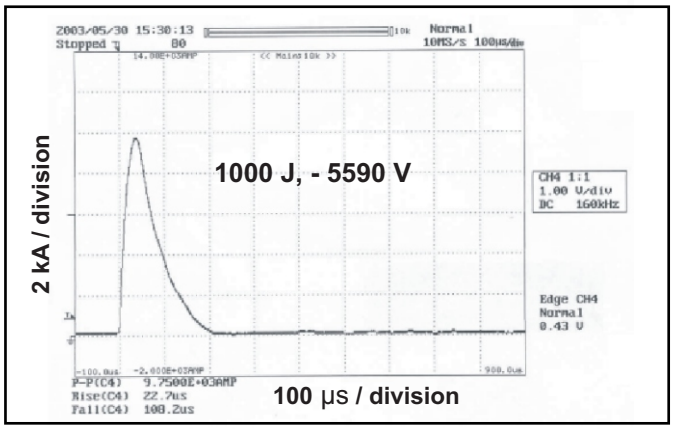
- To open and gain access to the high voltage (HV) connection box, the 230 V mains CE-form connector must first be physically removed.
- High voltage can only be activated when the HV connection box is completely closed.
- If the HV connection box is opened, even partially, during operation, the HV will automatically switch off and the unit will generate a final trigger to discharge the capacitors.
- Similarly, when the HV is switched off normally by pushing the red stop button, an automatic final trigger will discharge the capacitors.
- When the HV connection box has been opened completely, both poles (zero and negative) will automatically be shorted.
- The system contains internal bleed-off resistors to eliminate any possibility of unwanted charging effects.
- A power lock limits the output to Geo-Boomer to 400 J.

Operational Features

- **from 100 J to 1000J real power**
- **Unique negative discharge technology**
- **User-friendly & 100 % safe**
- **Very reliable, 3 rd generation model**

Cutting-Edge Pulsed Power Technology

The Geo-Spark 1000 is a revolutionary high voltage (HV) power supply based on cutting-edge 'pulsed power' technology. The system uses an extremely reliable, state-of-the-art thyristor switch that can generate very short (60 - 200 µs) HV pulses of up to 15 kA at - 5.6 kV at high repetion rates.



Preserving Electrode Mode

These pulsed power supplies are fundamentally different from any other HV power supplies. They have been designed specifically to power the Geo-Source range of multi-tip sparkers in our patented **'**Preserving Electrode Mode**'.** In this mode the electrodes have a negative potential with respect to the source frame (= ground), thereby reducing electrode wear to almost zero.

Negative Electric Discharge Pulse

There is no other unit commercially available that allows you to generate a negative high voltage pulse with such a high dI/dt ratio.

No Electrical Oscillations - Clean Signature

The pulse output has NO electrical oscillations, which affect the acoustic signature. The integrated capacitor bank consists of two indestructible 32 µF capacitors rated for more than 200 million (= 2 x 10^8) discharges. For example, a ¼ second discharge rate would give continuous work for 1½ YEARS.

Low Power Consumption

The Geo-Spark 1000 PPS can be operated from a small 230 V /5 kVA generator or from ordinary 230 V /16 A mains socket. The system is designed not to draw excessive peak currents.

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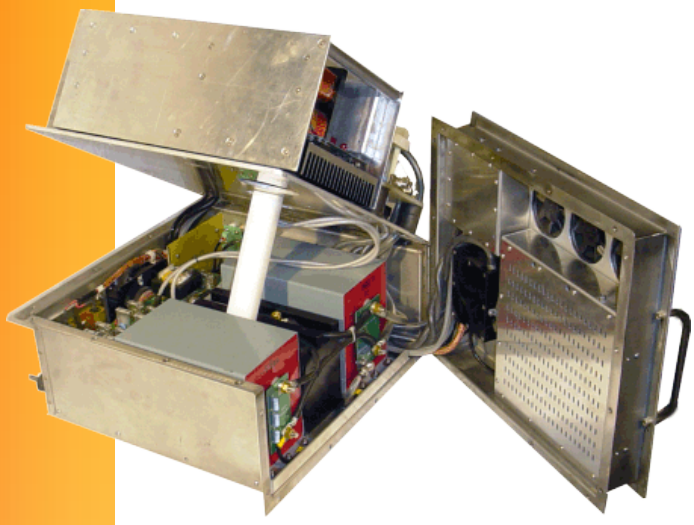

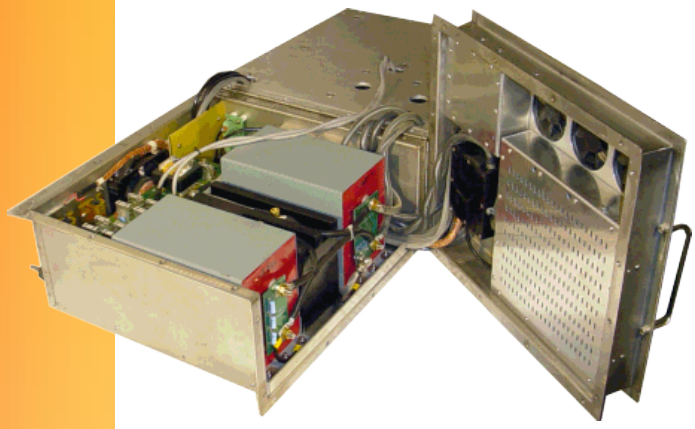

Safe and Intuitive Operation

All connections, command buttons, switches and status LEDs are front-mounted to ensure direct safe access and intuitive operation.

Flexible Energy Output

The systems feature a very flexible energy output, ranging from 100 to 1000 J (in steps of 100 J), that can be modified while online.

This is achieved by:

- varying the operating voltage (selectable from -2000 V to -5600 V);
- varying the capacitance (selectable from 32 µF to 64).

Triggering

Remote triggering of the unit is implemented by a 5 V TTL pulse of 1 ms, which is internally converted into a fibre-optic signal to the thyristor trigger. There is no need for any external opto-isolator on the trigger line. During standby between survey lines, the unit will NOT trip - it will slowly bleed off but will remain ready to go for the next line.

USB connection on front

This new feature allows to connect a PC and provides direct access to the control software. You can check the usage data and the system functionality. It also allows customise the control software and internal configuration.

Modular Internal Architecture

The pictures at the left give an idea of the advanced internal architecture that allows the opening and inspection of the systems without disconnecting any components.

The internal construction comprises three main individual compartments:

- upper compartment with pulsed HV module, the thyristor switch and relay/opto PCB.
- lower compartment with the pulse capacitors, capacitor switch, etc.
- front compartment with line filter, mains breaker, HV connection box, main control PCB and cooling fans.

Microprocessor Control

All internal initialising and safety procedures are microprocessor-controlled and the current system status can be monitored via a comprehensive series of LEDs. This provides an easy and straightforward system operation that is basically limited to the following actions:

- switching on/off the control unit (230 V / 50-60 Hz, single phase);
- selecting the capacitance and voltage;
- activating/deactivating the HV generation.

Quality Built to Last

These pulsed power supplies are built to last, electronically and mechanically. Ten rubber shock absorbers in a sturdy, high quality polyester flight case support the compact inner housing that contains the actual unit.

Additionally, rubber shock absorbers support each vibration-sensitive component inside the inner housing.

Physical Info

Dimensions flight case: L x W x H=

Weight: 75 kg

Make sure mains power is **220-30 V / 50-60 Hz**, Over-voltage will damage the PS

Always put the instrument in its normal upright position. Always put the sea ground provided.

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